Tekonsha®

The Future Of Brake Controls Is In The Palm Of Your Hand

9010 COMMANDER® (2 – 4 Brakes)
9020 COMMANDER XP® (2 – 8 Brakes)

Congratulations! The Tekonsha Commander electronic brake control with Load-Fix™ is the most advanced brake control ever made. The Commander is so innovative it will be quite different from any other brake control you have ever used or installed, so please PAY CAREFUL ATTENTION TO THE FOLLOWING DIRECTIONS.

We are confident that Commander will be the easiest to install, most easy-to-use and reliable brake control you have ever owned. If you should encounter any difficulty with the Commander call Tekonsha Engineering toll-free at **1-800-325-5860**.

Unique Features Of The Tekonsha Commander® and Commander XP®

- Patented inertia-activated sensor for safest, smoothest stops under any conditions.
- Unique Load-Fix™ switch adjusts braking action for varying load weight (ideal for horse and utility trailers).
- Polarized easy-disconnect plug for multiple vehicle use or secure stowage.
- Flexible mounting options for maximum visibility and comfortable reach.
- Compact design fits today's smaller tow vehicles.
- LED circuit "monitor" verifies connection to trailer brakes.
- Easy-to-read LED scale for accurate gain setting and monitoring brake current "draw".
- 5 year warranty.

Identifying The Important Components On The Commander® or Commander XP®

(See Figure 1)

(See Figure 1)

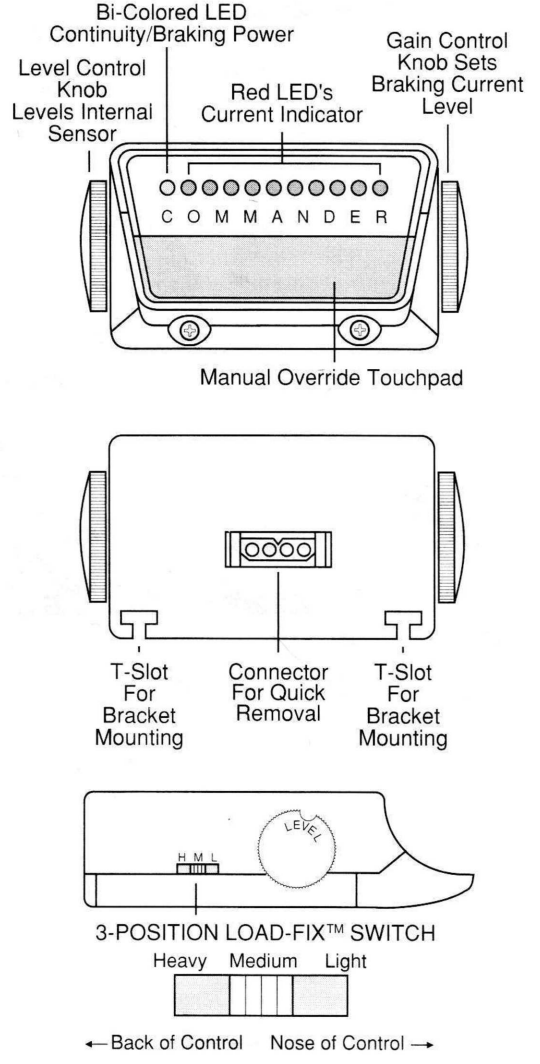

Figure 1

9010 COMMANDER
2–4 BRAKE SYSTEM
Red LED's
Current Indicator Scale

0 ——→ 12 amps

9020 COMMANDER XP
2–8 BRAKE SYSTEM
Red LED's
Current Indicator Scale

0 ——→ 24 amps

READ THIS FIRST!

Before you install the Commander please read the following:

The Commander is unlike any other electronic brake control ever made. When properly installed, the stopping action on the Commander is a SMOOTH, STEADY AND SURE ACTION. *DO NOT SET THE LEVELING OR THE GAIN AT AN AGGRESSIVE LEVEL. YOUR BRAKES MAY LOCK UP.*

Mounting Instructions

WARNING: When installing the Commander make sure the angle of installation falls within the following guidelines: **NOSE UP (+) 70 DEGREES OR LESS. NOSE DOWN (-) 20 DEGREES OR LESS. (See Figure 2). FAILURE TO INSTALL COMMANDER WITHIN THESE CONSTRAINTS MAY CAUSE YOUR CONTROL TO BECOME INOPERABLE.**

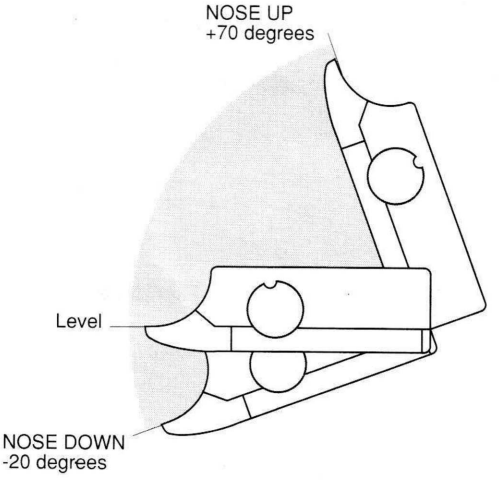

Figure 2

Several mounting options are available with the Commander electronic brake control. To fully utilize the advanced features of Commander, Tekonsha suggests dash-top mounting.

NOTE: The Commander must be mounted securely with the rear of the control facing toward the front of the tow vehicle. The Commander will not operate properly if mounted sideways or upside down.

Dash Mount With Scotchmate™ Fastening System Only

(See Figure 3)

WARNING: When applying the Scotchmate™ "hook and loop" fastening tape allow 24 hours before removing the COMMANDER from mounted position. This fastening tape is designed for permanent bonding. Surface damage may occur if removal of mounting is necessary. **TO PROPERLY AND PERMANENTLY ADHERE, TAPE MUST BE APPLIED WHEN SURFACES ARE ABOVE FREEZING (32°F.).**

(1) Select flattest area of dash within easy reach of driver.

(2) Be sure surface is clear, dry and free of oil and wax. We recommend isopropyl (rubbing alcohol) to clean surface.

(3) With mated Scotchmate tape strips pressed together, peel off backing from one side and apply adhesive side of strips firmly on Commander.

(4) Remove backing from other side of strips and place the Commander in the desired location.

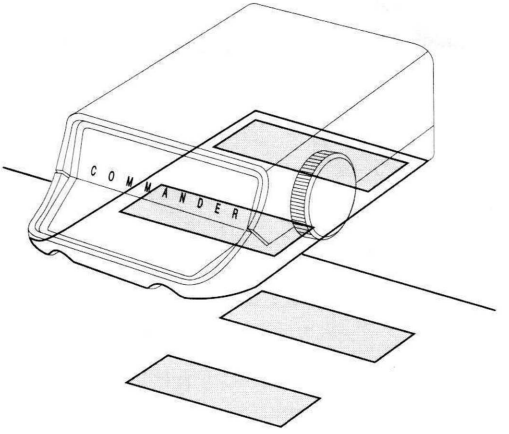

Figure 3

Dash Mount With Dash Clip

(See Figure 4)

(1) With mated strips pressed together, peel backing off of one side and press strips firmly on dash clip.

(2) Remove backing from other side of strips and center the Commander above the dash clip.

(3) Press Commander firmly against the Scotchmate tape fastened to the dash clip.

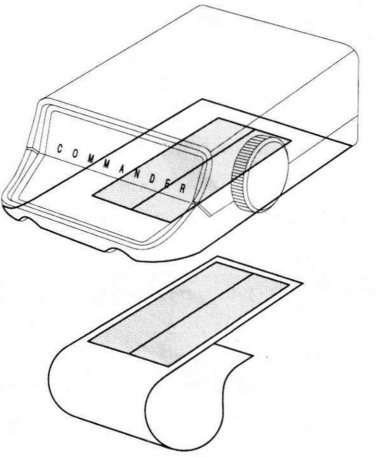

Figure 4

Under Dash Mount With C-Bracket

(See Figure 5)

Commander must be mounted on a solid surface. Do not mount the controller on the glove box, ash tray or removable access panels.

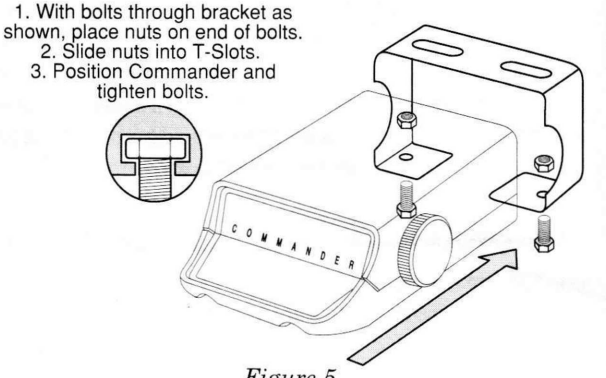
1. With bolts through bracket as shown, place nuts on end of bolts.
2. Slide nuts into T-Slots.
3. Position Commander and tighten bolts.
COMMANDER

Figure 5

Wiring The Commander® or Commander XP®

9010 COMMANDER (See Figure 6a)
9020 COMMANDER XP (See Figure 6b)

WARNING: Before beginning the wiring process please read the following CAREFULLY: The COMMANDER must be installed with 12 volt negative ground systems only.* Reverse polarity or improper wiring will destroy the brake control. The COMMANDER will not function without solid connections on all four wires. Loose connections may result in no trailer braking. Tekonsha recommends the use of insulated, solderless, crimp-on butt connectors. REVERSAL OF THE **BLACK** (BATTERY POSITIVE) AND **WHITE** (GROUND) WIRES WILL DESTROY THE COMMANDER ELECTRONIC BRAKE CONTROL.

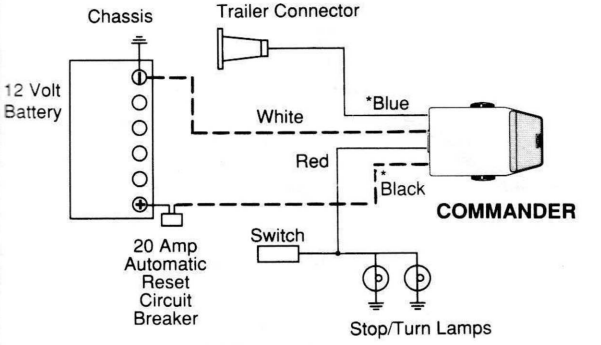

*Figure 6a COMMANDER **

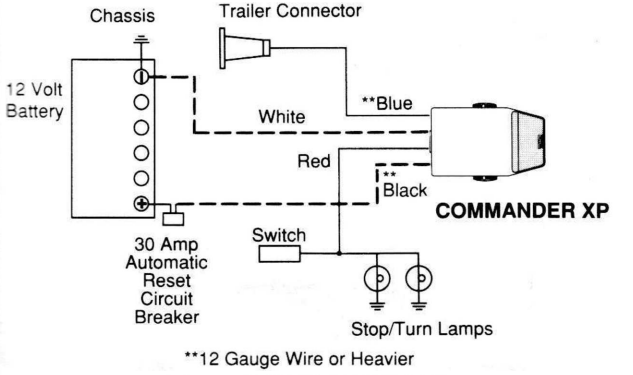

*Figure 6b COMMANDER XP ***

* For use with positive ground systems, use Tekonsha's P/N 3191.

(1) Using the appropriate hardware, connect the **WHITE** wire to the **NEGATIVE** (-) terminal of battery.

WARNING: UNITS WHICH ARE NOT GROUNDED TO THE NEGATIVE TERMINAL OF THE BATTERY MAY NOT OPERATE OR MAY OPERATE INTERMITTENTLY. DO NOT GROUND THE WHITE WIRE TO THE DASH OR OTHER INTERIOR METAL SURFACES.

(2) Connect the **BLACK** wire through an automatic reset circuit breaker to the **POSITIVE** (+) terminal of battery. **The black wire is the power supply line.**

Standard Wiring Practices recommend that an appropriate circuit breaker be installed in wires attached to the battery's positive terminal. This will minimize the possibility of accidental damage due to circuit overload. **THE BLACK WIRE SHOULD NOT BE ATTACHED TO ANY OF THE TOW VEHICLE'S SUPPLY LINES OR FUSE PANELS.** This may result in overload or damage to the tow vehicle wiring–resulting in no trailer braking. **ROUTE ALL WIRES AS FAR FROM RADIO ANTENNA AS POSSIBLE TO REDUCE AM INTERFERENCE.**

(3) The brake control's **red** wire must be connected to the circuit which is the cold side of the stoplight switch. **Splice down line from the switch, do not disturb the position of the switch.** This includes all 1960-1996 models unless specified otherwise by the vehicle manufacturer.

Call your tow vehicle dealer for any vehicles not listed in this section.

A: Ford: The **red** wire from the brake control splices directly into the **6 pin connector** (**light green** wire) for **most 1994-97 E and F series vehicles, and 1997 Expeditions,** or into the **4 pin connector** (F Series, light green, E series, light green with red tracer) **for most 1993-92 E and F series.** The connector is located at the bottom of the instrument panel, directly below the radio for F series and near the brake pedal support arm for E series. 3 or 4 axle applications require installation of a 30 amp circuit breaker for the supply line.

1991-89: Per Ford instructions: Electric brake controls must splice into the stoplight line via the turn signal harness and not directly to the stoplight switch. The turn signal harness is located near the steering column.

NOTE: Prior to 1992, the Ford Trailer towing package DOES NOT include the stoplight wire which the brake control splices into (1992-1997 are useable as is for the stoplight wire).

Explorer, Rangers and Aerostars, the **red** wire splices into the cold side of the stoplight switch.

B: General Motors S-T-C-K and G Models: The **red** wire from the control splices into the cold side of the stoplight switch. Color reference: **WHITE wire for 1988-93 and 1995-97 models. 1994 S-T; WHITE, 1994 C-K and G vans; YELLOW, 1994 Suburban; WHITE** (other colors; org, pnk/blk, ppl (2)).

ALL GM VEHICLES 1989-97: GMs recommended location to connect the **RED wire** from the control, is a 10 pin connector. This connector is located to the left of steering column just over the drivers left thigh. It is off the main loom of wires going into the instrument panel. It is a white connector wrapped with gray foam tape, it will have two white wires exiting the connector. The correct wire to connect the red wire to is in the corner of this connector in the "F" position. This connection will eliminate any problems with the electrical circuits dealing with A.B.S. or cruise control.

C: DODGE 100-350 D and W Models: The **red** wire from the control splices into the cold side of the stoplight switch. Color reference: **WHITE wire for 1988-93 models, 1994-95 for D & W, also for 1995-96 Ram van; WHT/TAN** (other colors; bk/wht, db/rd, pk/bk, bk). **1994 Ram van; WHITE** (other colors; yl/rd, wht/pk, db/rd, pk, bk). WITHOUT SPEED CONTROL, db/rd and yl/rd are missing.

1996-97 Dodge Ram and Dakota pickups: Equipped with trailer tow package, have 4 pin connector on steering column under dash.

Wiring Diagram:

Function	Truck	Control
Brake	Lt. Blue	Blue
Power	Red/Tan	Black
Stop light	White	Red
Ground	Black	White

D: JEEP: The **red** wire from the control splices into the cold side of the stoplight switch. Color reference: **1988-90 LB/BK** (light blue with black tracer), **1991-93 WHT/TAN** (white with tan tracer) **1994 and newer vehicles** check with Jeep dealer.

(4) Now connect the **blue** wire to the trailer brake wire.

WARNING: Use proper gauge wiring when installing the COMMANDER. Use of smaller gauge wire may result in less efficient braking. Heavier gauge wire may be used than that which is recommended in figure 6.

WARNING: If the level adjustment is set in an overly aggressive position, brake pulsing may occur when the emergency flashers are on. A Tekonsha Pulse Preventer may be used to eliminate the pulsing.

(5) 3-Position Load-Fix™ Switch: The 3-position Load-Fix™ switch allows the operator to adjust the response of the trailer braking to help compensate for varying trailer loads. Lighter loads need less braking, heavier loads need more braking.

Select the appropriate switch position for your application using the following guide.

1) Light (switch towards front of control) trailer weighs less than tow vehicle.

2) Medium (switch in center position) trailer weighs same as the tow vehicle (within 15%).

3) Heavy (switch towards back of control) trailer weighs more than tow vehicle.

The Load-Fix™ switch has a direct impact on the "level" adjustment. If the switch has been changed from one setting to another check the level adjustment.

Leveling The Sensor

(See Figure 7)

After the COMMANDER has been securely mounted **the level adjustment must be set.** The level adjustment in conjunction with the Load-Fix™ switch determines how aggressive or delayed the trailer braking will be. **The COMMANDER is an inertia activated control and requires the level adjustment be set properly, or the automatic response will not be correct.**

NOTE: To properly level the sensor, the trailer and tow vehicle must be parked on a level surface and **the trailer must be connected to the tow vehicle** (wire harness plugged into the tow vehicle).

Prior to setting the level adjustment, with the tow vehicle connected to the trailer, the first LED on the COMMANDER must be lit and the color is **GREEN**. If the LED is not **GREEN** in color, consult the troubleshooting manual before proceeding.

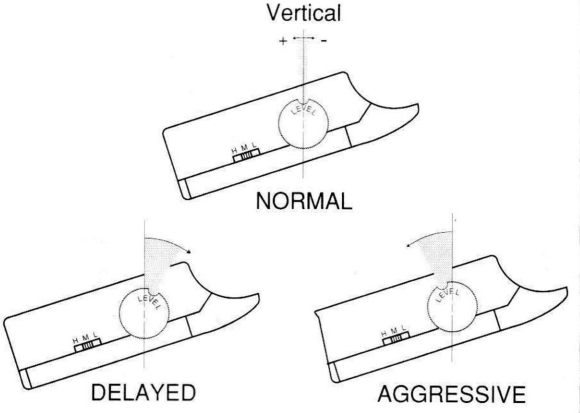

Figure 7

NOTE: FIGURES ARE FOR REFERENCE ONLY. THE LEVEL ADJUSTMENT MUST BE SET ACCORDING TO THE FOLLOWING STEPS.

(1) Set the "**GAIN**" control knob (knob on RIGHT side of Commander marked "**GAIN**") to maximum by rotating the knob clockwise (towards back of control). NOTE: TOTAL ROTATION OF THE GAIN KNOB IS ONLY 270°.

(2) Depress brake pedal and hold.

(3) With the "**GAIN**" control set to maximum, rotate the sensor leveling knob (located on LEFT side of Commander, marked "**LEVEL**") counter-clockwise (towards back of control) until the first LED just starts to change colors from green to red. Now **carefully** rotate the "**LEVEL**" knob clockwise (towards front of control) until the first shade of orange is visible. The LED should show a dim orange for a typical setting and a brighter orange for an aggressive setting.

NOTE: Be careful when turning the "**LEVEL**" knob clockwise until the DIM **ORANGE** in the first LED is just visible. Zero to full output is less than 20 degrees, or about 1/8 of an inch.

(4) Release the brake pedal.

When the unit is leveled properly there will be very little current going through the brake magnets in a static state with the foot pedal depressed. Magnets will hum when there is current going through them. Anytime the first LED shows any color other than **GREEN**, there is current going through the brake magnets.

Before You Set The Gain

The manual override touchpad (located on the ledge of Commander) will be used in setting the gain. The maximum manual output is determined by the gain setting. As the trailer braking increases more RED LED's are lit.

The manual override touchpad is used only for setting the gain. The manual override touchpad SHOULD NOT BE USED UNDER NORMAL TRAILERING OPERATION.

WARNING: Although the manual override touchpad is sometimes used to correct trailer sway, it is important to note that road conditions at the time of an incident may create other problems and a brake control is not typically the best means of compensating for trailer sway. See your dealer for alternative methods.

Setting The Gain

NOTE: Level adjustment must be completed and the trailer must be connected to the tow vehicle before the gain adjustment can be set. The first LED on the COMMANDER must be **GREEN** in color. If the first LED is not **GREEN** consult the troubleshooting chart before proceeding.

(1) Rotate the "GAIN" knob such that the notch is at the "12 o'clock" position.

(2) Press on the override touchpad and note the number of RED LEDs which are lit. Greater braking means more LEDs are lit, less braking means less LEDs are lit.

(3) Release pressure on the manual override touchpad.

(4) Tow the trailer at low speed, approximately 20 MPH on a hard, level, dry road surface.

(5) Apply the manual override (press on the touchpad).

(6) If the trailer brakes do not lock up, increase the gain by rotating the "GAIN" knob towards the "5 o'clock" position (clockwise; more current, more LEDs lit). If trailer brakes do lock up, reduce the gain by rotating the "GAIN" knob towards the "8 o'clock" position (counterclockwise; less current, less LEDs will light).

(7) Repeat steps 4 through 6 until maximum gain control setting is achieved **WITHOUT TRAILER WHEEL LOCKUP: (NOTE: NOT ALL TRAILER BRAKES WILL LOCK UP DUE TO VARIOUS CONDITIONS)**.

(8) Now that the gain and level set switch (on the left side of the control) have been set for high speed stops, it is time to fine tune the level knob adjustment, for the majority of the stopping that you will be doing. Make several slow speed stops as if you are coming up to a stop sign, and take notice of how the trailer brakes respond. If you feel the brakes tending to grab and overpower your tow vehicle you have the level setting in what we call an aggressive setting. To correct this condition simply rotate the level knob, at the left side of the control clockwise slightly toward you, and repeat the stop. If on the other hand you feel the trailer pushing the tow vehicle the level setting is a little too delayed, to correct this condition simply rotate the level knob counterclockwise or slightly away from you and repeat stop. Allow sufficient time between stops to allow brakes to cool.

When the level setting and the gain setting are made correctly you should feel a unified braking event between tow vehicle and trailer. Always remember that once the gain setting (power to trailer brakes) has been made that setting should not be changed until such time as the road conditions or towing weight has changed. Braking response is a result of the level setting either too aggressive or too delayed.

NOTE: Gain level should never be set at a level high enough to cause trailer brakes to lock up. SKIDDING TRAILER WHEELS CAN CAUSE LOSS OF DIRECTIONAL STABILITY OF TRAILER AND TOW VEHICLE.
Gain control may need resetting to adjust for different load weights and road conditions.

NOTE: Braking performance may be slightly sluggish in sub-freezing temperatures. Allow adequate time for controller to warm up prior to use in sub-freezing conditions.

IMPORTANT FACTS TO REMEMBER:

Whenever the red LEDs are illuminated, current is being drawn from the tow vehicle battery.

The first LED is illuminated green only when there is a complete circuit from the 12 volt battery to the Commander through the brake magnets to ground.

The green LED draws approximately 10 milliamperes of current from the tow vehicle's battery.
WITH THIS LEVEL OF CURRENT DRAW IT WOULD TAKE WELL OVER 5000 HOURS TO DRAIN THE TOW VEHICLE BATTERY.

When traveling on steep grades the sensor may need to be adjusted to a less aggressive position (rotate level knob toward front of control. See Figure 7.)

Troubleshooting Chart

SITUATION
Tow vehicle connected to trailer — no illuminated green LED.
Tow vehicle connected to trailer, first LED is green. When manual override touchpad is pressed one of the following occurs: A. No red LEDs come on. B. Only red in the first LED. C. All red LEDs glow but are dim. D. Red LEDs light, then go out.
Braking with foot pedal is too aggressive
Braking is delayed for an extended period.
When the tow vehicle is not connected to the trailer, you will measure battery voltage across the brake line to the ground. This is normal for the control. As soon as the trailer is connected, the voltage measured will go to zero.

NOTE TO THE INSTALLER:

Collection of water inside of the connector mounted on the tow vehicle will reduce the life of the connector. To maximize the life of the connector by minimizing the corrosion build up, the brake line inside the connector mounted on the tow vehicle should be

WARNING:
Reverse connection of the breakaway battery will destroy the brake control.

PROBABLE CAUSE
1. Corrosion on trailer plug contact. 2. Loose 12 volt or ground connection. The Commander will not function without good solid connection to ground or 12 volts.
1. Gain control set at or near minimum. 2. Short on brake line (blue wire). 3. Reversed connection of black and white wires. (BRAKE CONTROL HAS BEEN DESTROYED.)
1. Open on ground line (white wire).
1. Short on brake line (blue wire).
1. Intermittent short on brake line (blue wire).
1. Sensor set too aggressive (see figure 7). 2. Load-Fix™ switch needs to be set further towards the back of the control.
1. Sensor set improperly (see figure 7). 2. Load-Fix™ switch needs to be set further towards the front of the control.

completely covered with silicone, or the inside of the connector could be filled with grease. The connector itself may also be mounted such that the brake line and ground <u>ARE NOT</u> the two terminals nearest the 6 o'clock position.

CAUTION:
Disconnect trailer plug from truck prior to testing breakaway switch, or you may destroy the brake control.

Five Year Limited Warranty

Tekonsha products are warranted to the original purchaser to be free from defects in material and workmanship for a period of five years from the date of sale.

Tekonsha will repair or replace (at it's option) products proven defective under normal use and service. Defective products should be returned to the dealer where purchased. If that is not possible, call Tekonsha Engineering to receive a Return Goods Authorization number. You may then ship the defective product prepaid or delivered to Tekonsha Engineering.

Tekonsha's warranty does not apply to products which have been altered, damaged by accident, negligence or misuse, or improperly installed, maintained or repaired.

All implied warranties, including the warranties of the merchantability and fitness for particular purpose, are excluded after five years from date of purchase.

Tekonsha's warranty limits our liability to the repair or replacement of Tekonsha products only. All incidental or consequential damages are excluded.

Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

If you have questions concerning our warranty, call us at the toll-free number below. Tekonsha service is with you all the way!

1-800-325-5860

This warranty is made in compliance with the Federal Consumer Products Warranty Law.

Tekonsha®

We're with you all the way

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